Wye Mills, MD Chesapeake Bay TMDL Public Meeting Summary

December 11, 2009

Chesapeake College
Todd Performing Arts Center (TPAC)
1000 College Circle
Wye Mills, MD 21679

Agenda

- **Welcome, introductions, and meeting logistics – Frank Dawson, MDNR (5 minutes)**
- **EPA presentation on the Chesapeake Bay TMDL and EPA expectations – Richard Batiuk and Bob Koroncai, EPA (40 minutes)**
- **Next Steps – Richard Eskin, MDE (15 minutes)**
- **Public comments, questions and answers – Panel moderated by Frank Dawson (60 minutes)**
- **Adjourn**

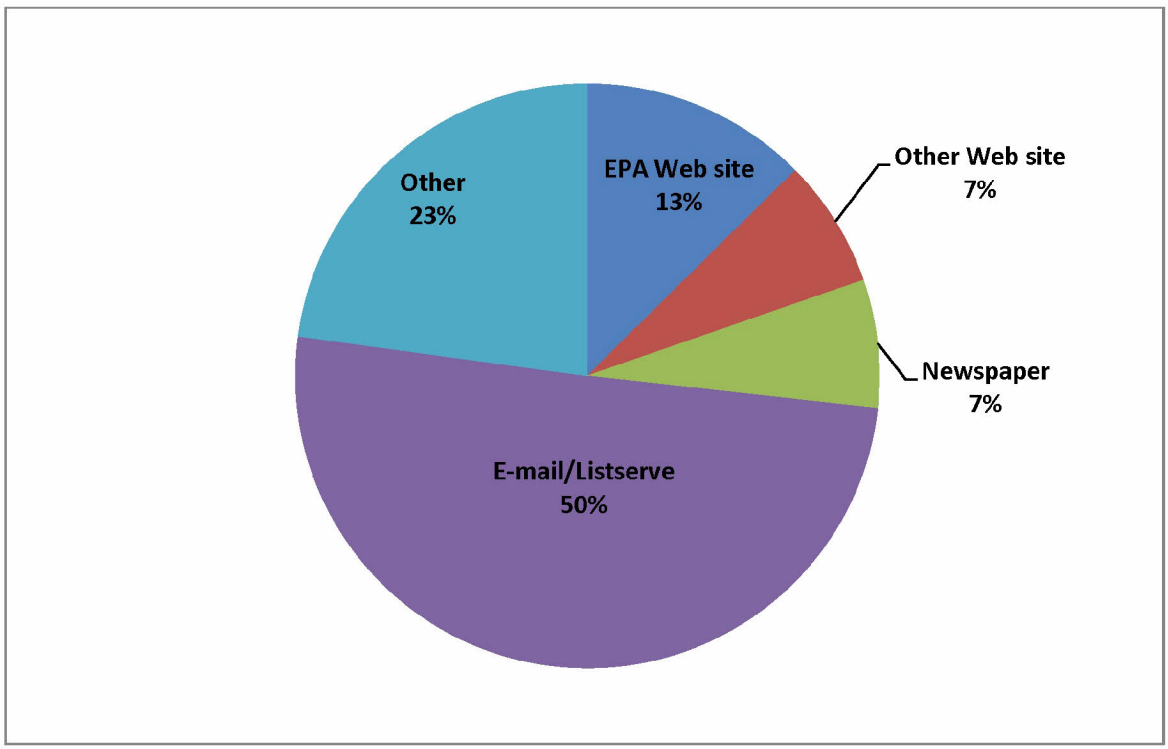
Attendee Detail

Total Attendees: 165

Registration Question:

How did you hear about this Meeting?

- E-mail/Listserve (64)
- Other (29)
  - Work (7)
  - Meetings (2)
  - Word of Mouth
  - LGAC Committee
  - Mailing
  - SWAGC
  - Baltimore EPA TMDL meeting
- U. S. EPA Web Site (16)
- Other Web Site _____ (9)
  - Trib Team (2)
  - MDE (2)
  - APA (2)
- Newspaper (9)



THE CHESAPEAKE BAY TMDL: Restoring Waters of Maryland and the Chesapeake Bay

Bay TMDL Public Meeting
December 11, 2009
Wye Mills, MD

Richard Batiuk and Bob Koroncai
U.S. EPA Region III

AGENDA

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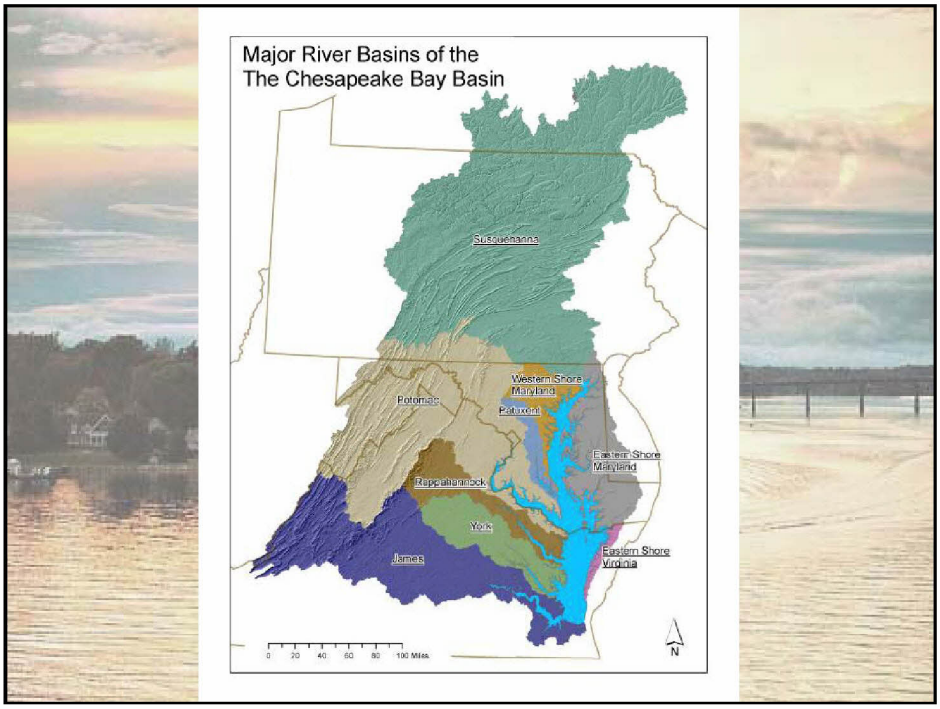
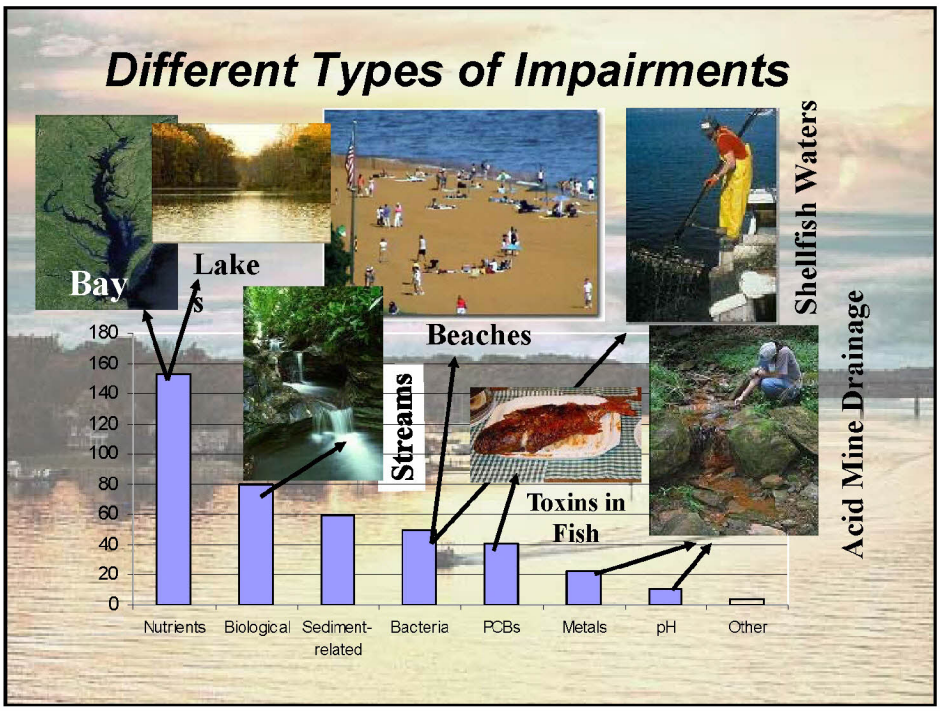
Panel to Address Public Comments

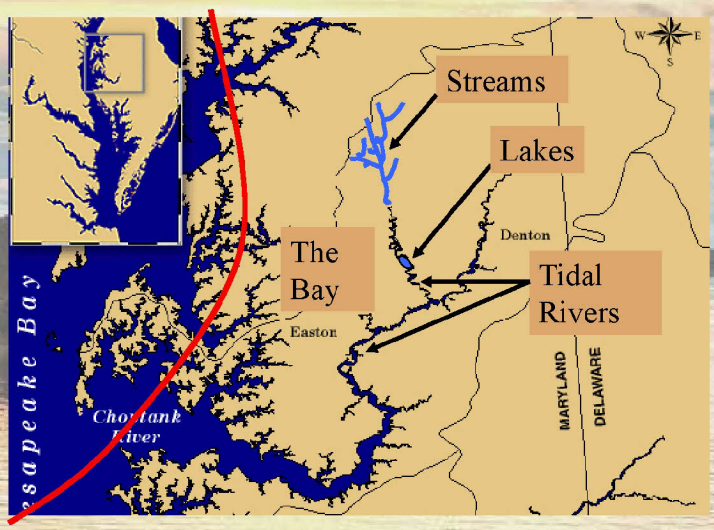
- Moderator: **Frank Dawson, MD Department of Natural Resources**
- EPA: **Richard Batiuk and Bob Koroncai**
- MD Department of the Environment: **Rich Eskin**
- MD Department of Natural Resources: **Frank Dawson**
- MD Department of Agriculture: **Royden Powell**




Local Water Quality Issues


Different Types of Impairments
Bay
Lake
s
Streams
Beaches
Shellfish Waters
Acid Mine Drainage
Toxins in Fish
180
160
140
120
100
80
60
40
20
0
Nutrients
Biological
Sediment-related
Bacteria
PCBs
Metals
pH
Other

Different Geographic Scales

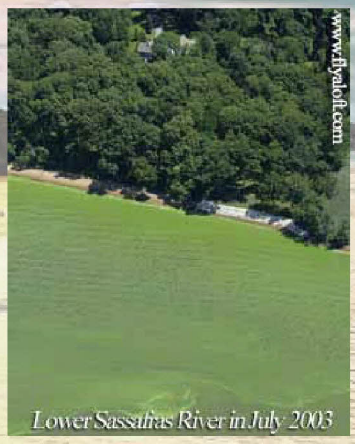


Solving Our Upstream Problems… Helps Solve our Downstream Problems

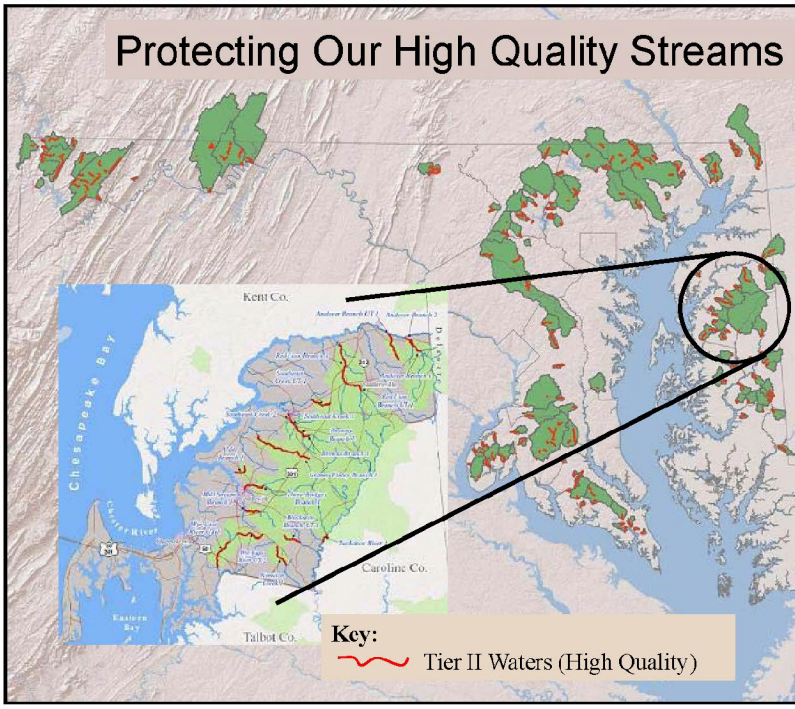
- Impervious Surfaces Cause the Physical Degradation of Small Streams.
- This Impairs their Biological Integrity AND Erodes Sediments, which Carry Pollutants Downstream.

Solving Our Upstream Problems… Helps Solve our Downstream Problems

- **Downstream Effects of Nutrients & Sediments:**
  - **Loss of Water Clarity**
  - **Algal Blooms**



Protecting Our High Quality Streams

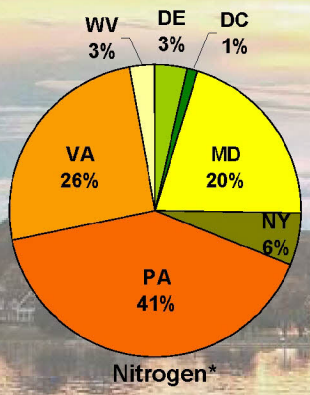


Chesapeake Bay Watershed-
By the Numbers

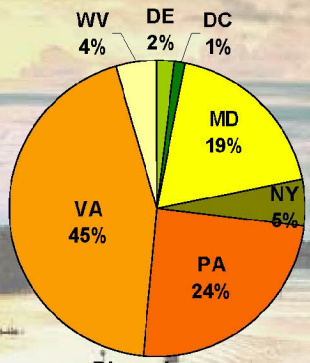
- Largest U.S. estuary
- Six-states and DC, 64,000 square mile watershed
- 10,000 miles of shoreline (longer then entire U.S. west coast)
- Over 3,600 species of plants, fish and other animals
- Average depth: 21 feet
- $750 million contribution annually to local economies
- Home to 17 million people (and counting)
- 77,000 principally family farms
- Declared "national treasure" by President Obama

Source: www.chesapeakebay.net

Nutrient Loads by State



Nitrogen*

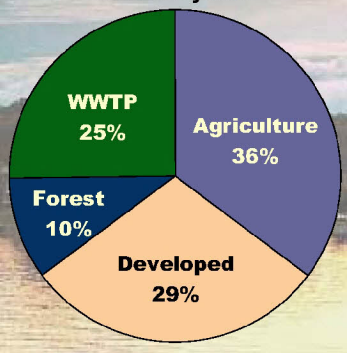


Phosphorus

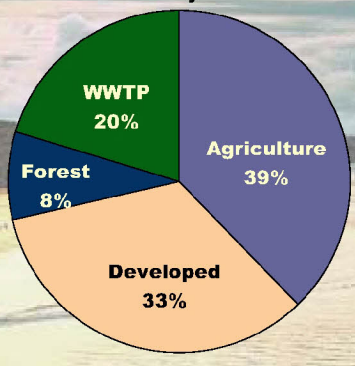
*EPA estimates a nitrogen load of 284 million lbs nitrogen in 2008. EPA assumes a reduction of 7 million lbs due to the Clean Air Act. This leaves 77 millions lbs to be addressed through the TMDL process.

Nutrient Sources of MD

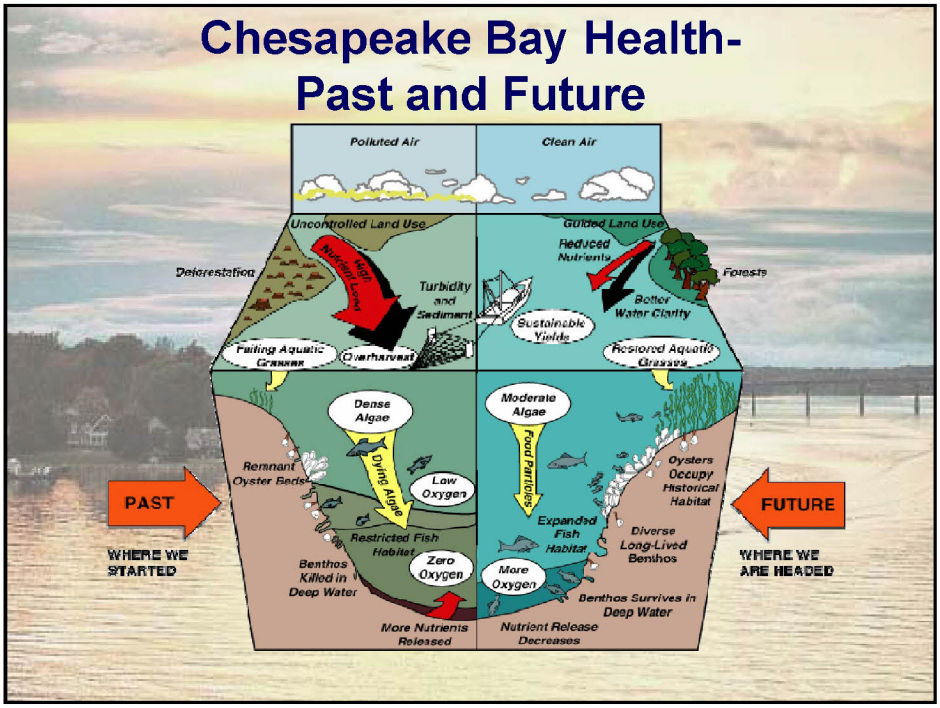
Sources of Nitrogen from Maryland

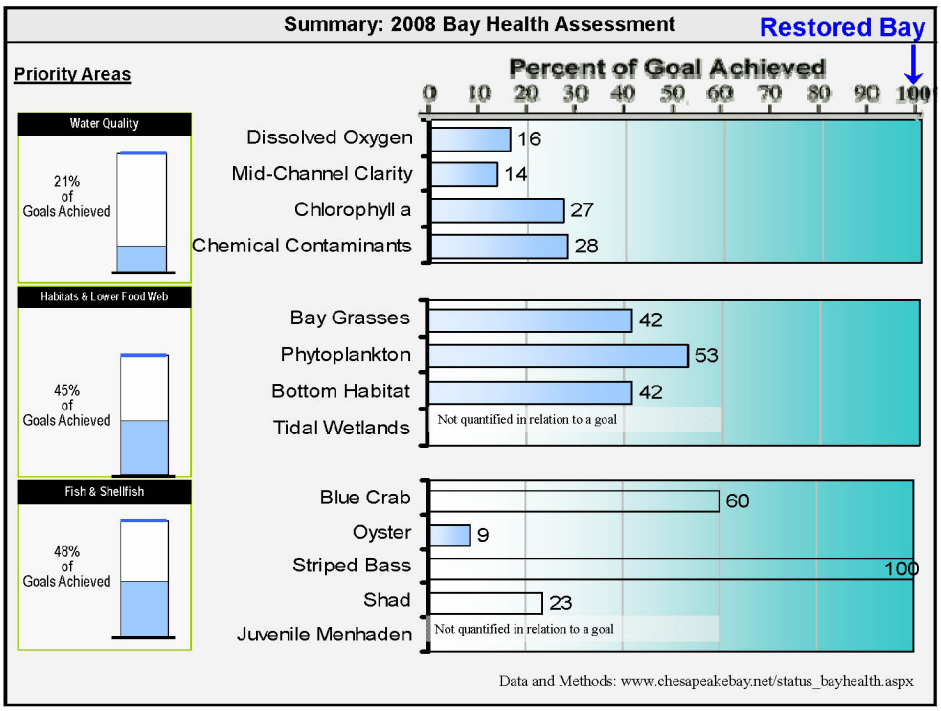


Sources of Phosphorus from Maryland

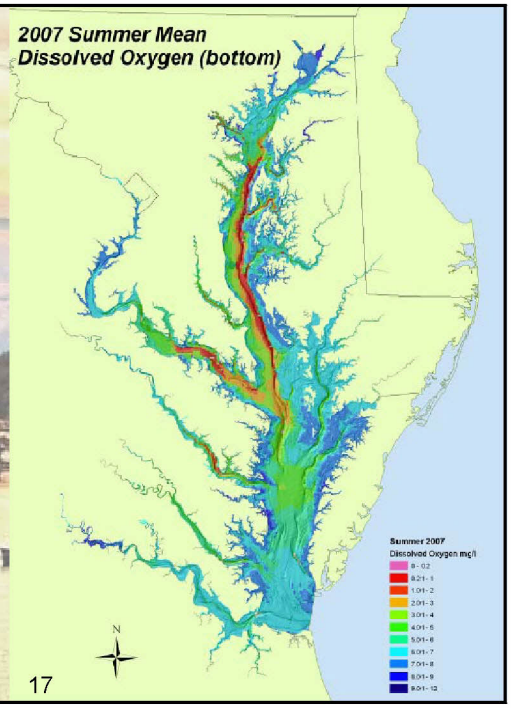


N and P values from 2008 Scenario of Phase 5.2 Watershed Model


Chesapeake Bay Health-
Past and Future
Polluted Air
Clean Air
Uncontrolled Land Use
Guided Land Use
Deforestation
Nutrient Loads
Turbidity and Sediment
Reduced Nutrients
Forests
Better Water Clarity
Sustainable Yields
Failing Aquatic Grasses
Overharvest
Restored Aquatic Grasses
Dense Algae
Dying Algae
Low Oxygen
Remnant Oyster Beds
Restricted Fish Habitat
Zero Oxygen
Benthos Killed in Deep Water
More Nutrients Released
Moderate Algae
Food Particles
Oysters Occupy Historical Habitat
Expanded Fish Habitat
Diverse Long-Lived Benthos
More Oxygen
Benthos Survives in Deep Water
Nutrient Release Decreases
PAST
WHERE WE STARTED
FUTURE
WHERE WE ARE HEADED


Summary: 2008 Bay Health Assessment
Restored Bay
Priority Areas
Percent of Goal Achieved
0 10 20 30 40 50 60 70 80 90 100
Water Quality
21% of Goals Achieved
Dissolved Oxygen 16
Mid-Channel Clarity 14
Chlorophyll a 27
Chemical Contaminants 28
Habitats & Lower Food Web
45% of Goals Achieved
Bay Grasses 42
Phytoplankton 53
Bottom Habitat 42
Tidal Wetlands
Not quantified in relation to a goal
Fish & Shellfish
43% of Goals Achieved
Blue Crab 60
Oyster 9
Striped Bass 100
Shad 23
Juvenile Menhaden
Not quantified in relation to a goal
Data and Methods: www.chesapeakebay.net/status_bayhealth.aspx

Low to no dissolved oxygen in the Bay every summer

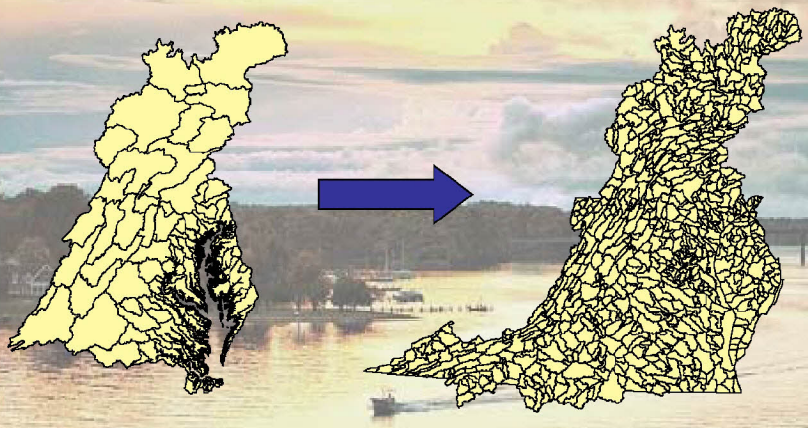


17

The Chesapeake Bay TMDL

- EPA sets pollution diet to meet states' Bay clean water standards
- Caps on nitrogen, phosphorus and sediment loads for all 6 Bay watershed states and DC
- States set load caps for point and non-point sources

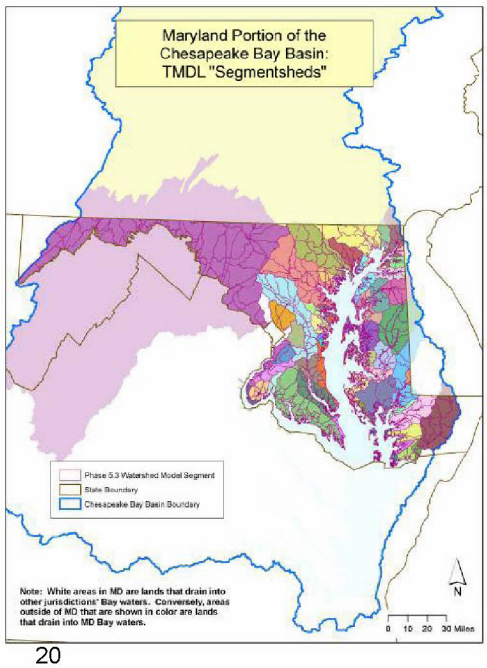
The Bay science supports local pollution diets…



Phase 4 Bay Watershed Model
(2000-2008)

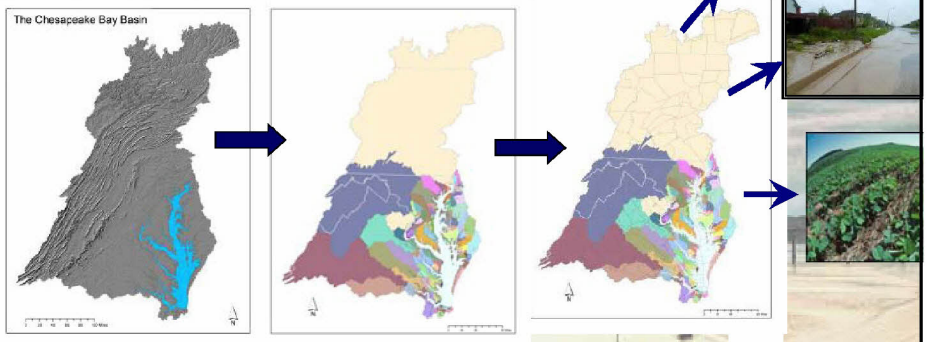
Phase 5 Bay Watershed Model
(2009-)

…with detailed representation of MD's local watersheds



20

Taking Responsibility for Load Reductions



Identify basinwide target loads

EPA, States, DC

Identify major basin by jurisdiction target loads

EPA, States, DC

Identify tidal segment watershed, county and source sector target loads

States, DC, local governments & local partners

What are the Target Pollutant Cap Loads for the Bay Watershed?

Current model estimates are that the states' Bay water quality standards can be met at basinwide loading levels of:

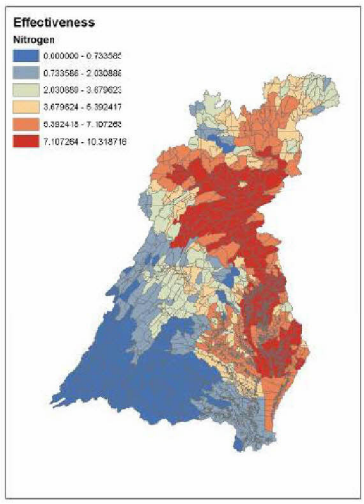
- 200 million pounds nitrogen per year
- 15 million pounds phosphorus per year

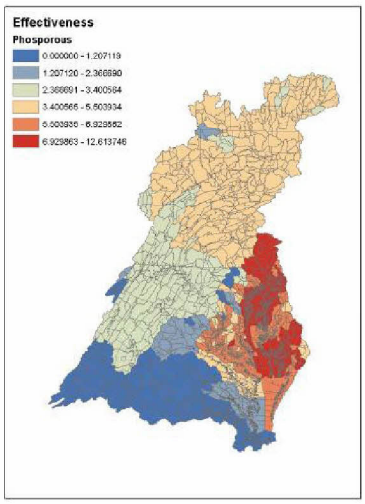
(Sediment target cap load under development-will be available by spring 2010)

Guidelines for Distributing the Basinwide Target Loads

- Water quality and living resource goals should be achieved.
- Waters that contribute the most to the problem should achieve the most reductions (on a per pound basis).
- All previous reductions in nutrient loads are credited toward achieving final cap loads.

Nutrient Impacts on Bay WQ





Current State Target Loads

Nitrogen

State	Tributary Strategy	Target Load
DC	2.12	2.37
DE	6.43	5.25
MD	42.14	41.04
NY	8.68	10.54
PA	73.17	73.64
VA	59.30	59.22
WV	5.69	5.71
Total	197.53	197.76

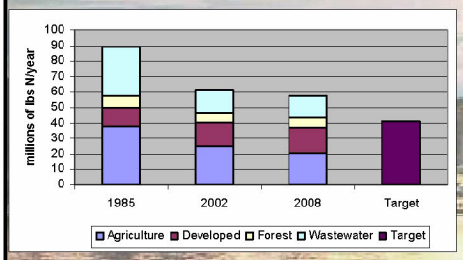
Phosphorus

State	Tributary Strategy	Target Load
DC	0.10	0.13
DE	0.25	0.28
MD	2.56	3.04
NY	0.56	0.56
PA	3.10	3.16
VA	7.92	7.05
WV	0.45	0.62
Total	14.93	14.84

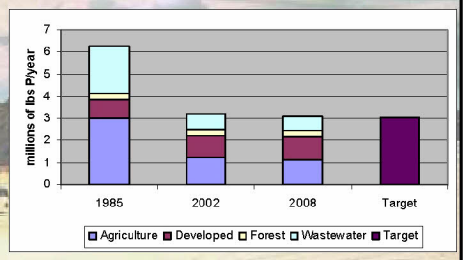
All loads are in millions of pounds per year.

Maryland's Past, Present and Future Estimated Loads

Nitrogen



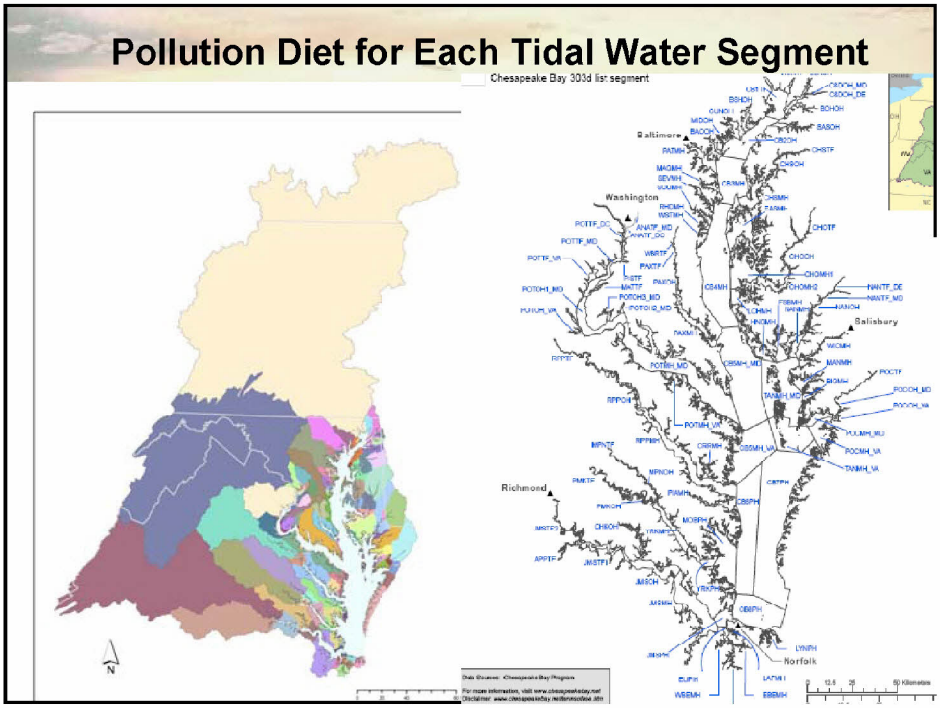
Phosphorus

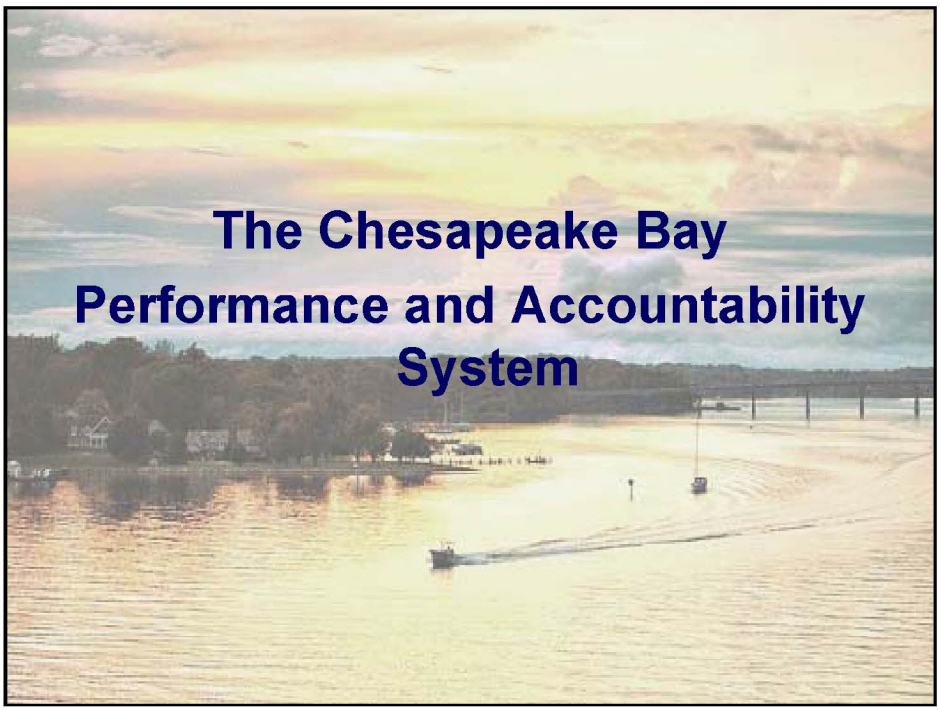


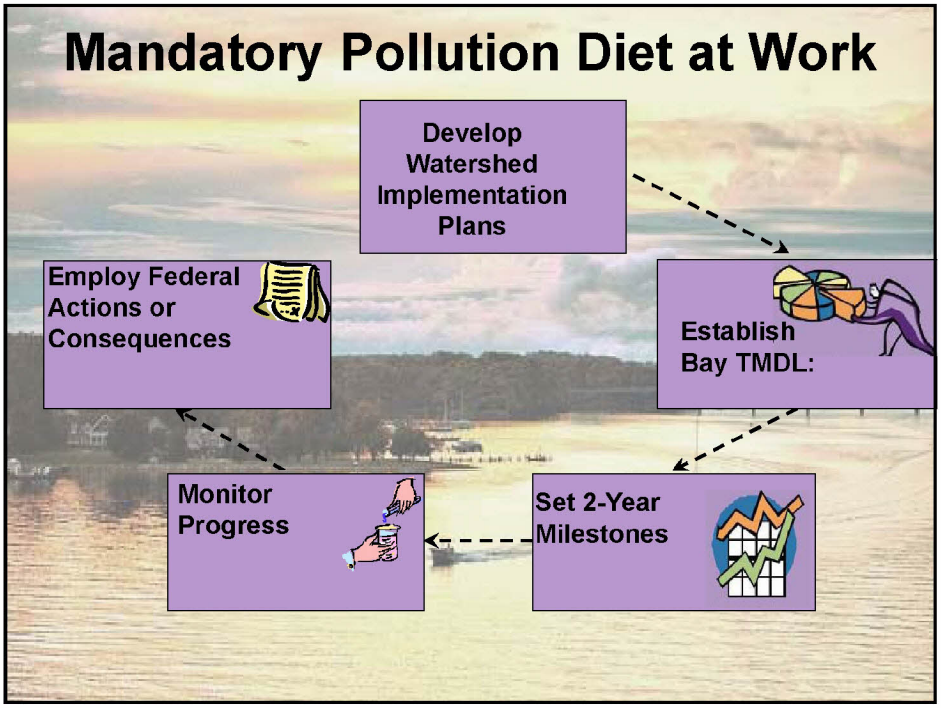
All scenarios run through Phase 5.2 Watershed Model

Target Load Refinements

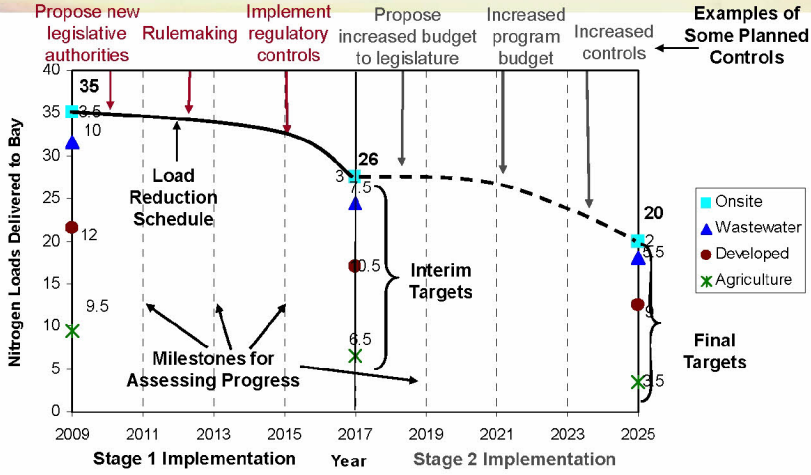
- If States' Bay Water Quality Standards can still be achieved…
  - The State may exchange nitrogen and phosphorus target loads within a basin; and/or
  - The State may exchange nitrogen and phosphorus loads from one basin to another within the State.


Pollution Diet for Each Tidal Water Segment
Chesapeake Bay 303d list segment
Baltimore
Washington
Salisbury
Richmond
Norfolk


The Chesapeake Bay
Performance and Accountability
System



Example: Projected Nitrogen Delivery from Major Basin in Each Jurisdiction by Source Sector



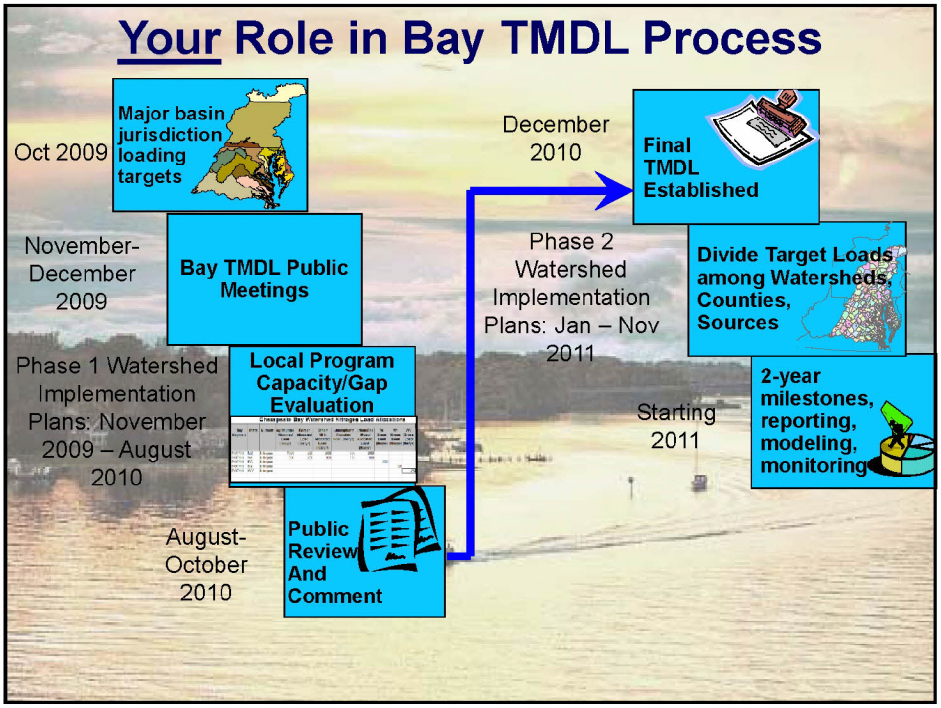
- Also divide jurisdiction load by 303(d) segment drainage area and, by November 2011, local area
- Attain jurisdiction-wide load reductions by the interim target, or justify why can still meet final target
- Jurisdiction would determine desired 2-year schedule to meet interim and final target loads
- EPA first evaluates milestones based on consistency with jurisdiction target load. EPA accepts shifts among source sectors, basins, segment drainages, and local areas if jurisdiction target load is met and local and Bay water quality goals are achieved

Federal Consequences

- Directed at states not achieving expectations
- Will be outlined in an EPA letter this fall. May include:
  - Assigning more stringent pollution reductions to regulated point sources (e.g., wastewater, stormwater, CAFOs)
  - Objecting to state-issued NPDES permits
  - Limiting or prohibiting new or expanded discharges (e.g., wastewater, stormwater) of nutrients and sediment
  - Withholding, conditioning or reallocating federal grant funds

Bay TMDL- Presidential Executive Order Connections

- Create Federal Leadership Committee
- Create the Performance and Accountability Framework
- Expand regulatory tools for CAFO's and urban and suburban runoff
- Improve nutrient and sediment controls on federal lands and roads
- Target farm conservation measures at high priority areas


Your Role in Bay TMDL Process
Oct 2009
Major basin jurisdiction loading targets
November-December 2009
Bay TMDL Public Meetings
Phase 1 Watershed Implementation Plans: November 2009 – August 2010
Local Program Capacity/Gap Evaluation
August-October 2010
Public Review And Comment
December 2010
Final TMDL Established
Phase 2 Watershed Implementation Plans: Jan – Nov 2011
Divide Target Loads among Watersheds, Counties, Sources
Starting 2011
2-year milestones, reporting, modeling, monitoring


Bay TMDL: Bottom-line
• Actions will clean and protect local waters in MD thereby supporting the local economy
• Restore a thriving Chesapeake Bay
• Federal, state, local officials and agencies will be fully accountable to the public
• Consequences for inaction, lack of progress

Further Information

- Chesapeake Bay TMDL web site
  www.epa.gov/chesapeakebaytmdl
- U.S. EPA Region 3 Contacts
  - Water Protection Division
    - Bob Koroncai
      - 215-814-5730; koroncai.robert@epa.gov
    - Jennifer Sincock (sincock.jennifer@epa.gov)
  - Chesapeake Bay Program Office
    - Rich Batiuk
      - 410-267-5731; batiuk.richard@epa.gov
    - Katherine Antos (antos.katherine@epa.gov)

MARYLAND
Department of the Environment

Understanding and Moving to Implementation of the Bay TMDL: WIPs and Milestones

Richard A. Eskin, Ph.D.
Director, Science Services Administration

DECEMBER 8, 2009

MDE

Maryland's Allocation Process (Overview)

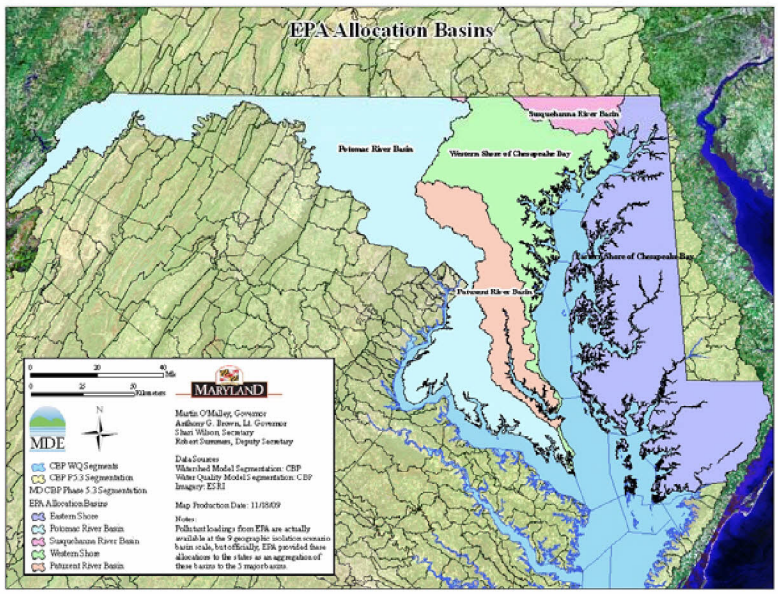
- MD must allocate draft major basin loads to State's Bay segmentsheds* by source sector for Phase 1 Watershed Implementation Plan (WIP)
- Identify Point Source (PS) and Nonpoint Source (NPS) target loads for each impaired segment drainage area:

Per EPA allocation method:
- ➢ **set targets based on controllable loads per sector**
- ➢ **assess equitable levels of effort**
- ➢ **consider relative effectiveness of segmentsheds per change in DO**

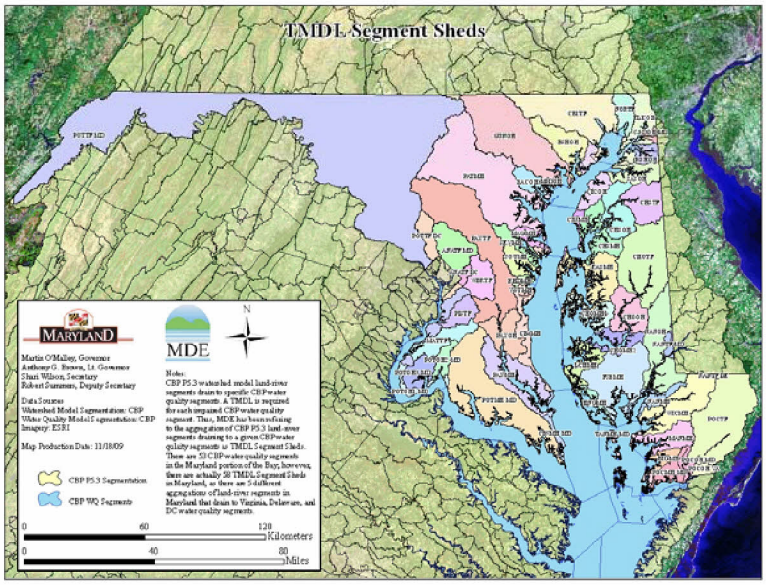
- Consider current regulations (ENR strategy, MS4 permit requirements, etc.)
- Report final allocations through web-based GIS

*Specific geographic land area that drains to a Bay water quality segment

5 Maryland Major Basins Assigned Initial Nutrient Target Loads



53 Maryland Bay TMDL Segmentsheds*



*53 draining to MD Bay WQ segments (+ 5 draining to DC, VA & DE waters)

Preliminary Nitrogen and Phosphorus Working Target Loads for Maryland Major Basins

Maryland Major Basins	2008 N Load* (million lbs/yr)	N Target Load (million lbs/yr)	2008 P Load* (million lbs/yr)	P Target Load (million lbs/yr)
Susquehanna	1.2	0.8	0.05	0.05
Eastern Shore	19.0	12.8	1.14	1.24
Western Shore	15.0	10.2	0.79	0.62
Patuxent	3.5	3.2	0.28	0.24
Potomac	18.4	14.1	0.84	0.89
MD TOTAL	57.1	41.0	3.09	3.04

* Draft 2008 Loads from Preliminary Implementation Scenario in 10/20/09 PSC Handout

Maryland's Allocation Process (Stages)

Stage 1: Develop allocation method using Phase 5.2 watershed model and EPA allocation approach

Stage 2: Identify members and communicate responsibilities for PS and NPS Sector Teams

- PS Sector Team: check, confirm individual PS target loads
- Using Phase 5.3, the allocation method, and confirmed PS estimates, subtract from total target load to estimate NPS target load for each segmentshed
- NPS Sector Team: review NPS target loads

Maryland's Allocation Process (Stages) – cont'd.

Stage 3: Source Sector Team discussions

- Identify loading gap closure options to finalize scenario that meets working target loads provided by EPA
- Meetings with local governments and stakeholders
- Finalize preliminary Phase 1 WIP ***(due June 1, 2010)***

Stage 4: Begin work on Phase 2 WIP

- Detailed implementation plan with specific controls at county/sector level

Possible Source Sector Categories

POINT SOURCES

- Major WWTP (individual)
- Minor WWTP (aggregate)
- Major Industrial (individual)
- Minor Industrial (aggregate)
- Dredged material placement sites
- CAFOs
- Construction
- Regulated urban stormwater
- Mines (sediment impacts)

NONPOINT SOURCES

- Agriculture
- Septics
- Forest
- Harvested forest
- Non-regulated urban stormwater

WIP Development: Eight Required Elements (per EPA Nov. 4 Letter)

1. Interim (2017) and Final (2025) Nutrient and Sediment Target Loads (by major basin in each State)
2. Current Loading Baseline and Program Capacity
3. Account for Growth and Development anticipated 2011-2025
4. Gap Analysis
5. Commitment and Strategy to Fill Gaps
6. Tracking and Reporting Protocols
7. Contingencies for Slow or Incomplete Implementation
8. Appendix with Detailed Targets and Schedule:

SEE NEXT SLIDE!

WIP Development: Required Elements (continued)

8. Appendix with Detailed Targets and Schedule:

   a. Interim and final load targets by **segmentshed and source sector**--and identify amount and location of loads from individual or, as necessary, aggregate point sources – *EPA will use in determining WLAs and LAs for Bay TMDL*

   b. Reduction schedule comprising **2-year milestone target loads** at the scale of each major basin within the State – *EPA will use to assess if milestones are on schedule to meet interim and final goals*

   c. November 2011 Update (Phase 2): Loads divided by local area (co-seg) and controls to meet 2017 interim target load (as well as specific 2-year milestone commitments)

Phase 2 WIP:

County-Segment (Co-Seg) Allocations

- Bay Water Quality Segmentsheds intersected by Local Jurisdiction boundaries
- Draft due June 1, 2011
- Final due Nov. 1, 2011

MDE

EXAMPLE:

Patuxent Tidal Fresh (PAXTF) Segment Drainage Area with counties delineated

MDE

MD's Accelerated Nitrogen and Phosphorous Goals

2-Year Milestones: A New Approach

- Short-term two year "milestones" based on increasing 1985-2007 rate of implementation to achieve what is needed by 2020.
  - ➢Overall Nitrogen Reduction by 2020:

    15.95 M lbs = (1.25 M lbs/yr)
  - ➢Overall Phosphorous Reduction by 2020:

    840,000 lbs = (64,615 lbs/yr)
- Explicit commitments, contingency plans
- Will become part of Bay TMDL WIPs

MARYLAND

2011 Urban Milestones

- ENR: Reduce **N** 740,000 lbs/yr, **P** 39,000 lbs/yr
- Blue Plains BNR upgrade: 190,000 lbs/yr
- Stormwater Management Retrofits: 90,000 acres
- Required septic retrofits in Critical Area: 1,080 systems
- Voluntary septic retrofits (outside of Critical Area): 1,920 systems
- Maryland Healthy Air Act: Reduce **N** 305,800 lbs/yr

2011 Non-Urban Milestones

- **Agriculture**
  - Cover crops: 460,000 acres/yr
  - NMP enforcement: 100,000 acres
  - Soil Conservation and Water Quality Plans: 257,000 acres
  - Manure Transport: 10,000 tons/yr
- **Natural Filters**
  - Grass and forest buffers: 13,000 acres
  - Wetland Restoration: 1,700 acres

Bay TMDL and WIP Schedule

November 2009 Basin-jurisdiction target loads

December 2009 Preliminary EPA Public Meetings

- **Tuesday, Dec. 8 – 2:30-4:30 PM – MDE**
- **Friday, Dec. 11 – 1:30-3:30 PM – Chesapeake** College

June 1, 2010 Preliminary Phase 1 Watershed Implementation Plans

August 1, 2010 Draft Phase 1 Watershed Implementation Plans

TMDL/WIP Schedule, continued

August 15-October 15, 2010

Public Comment Period for Draft Bay TMDL and Draft Watershed Implementation Plans

December 31, 2010

Final TMDL and Phase 1 WIPs Approved

June 1, 2011

Draft Phase 2 WIPs with Local Allocations and Specific Controls

November 1, 2011

Final Phase 2 WIPs

MDE

Maryland Department of the Environment

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MARYLAND


Thank you for your participation.
THANK YOU
That concludes today's meeting.

Questions Answered

Questions Answered (in the order in which they were asked):

Note: The letter indicates the source of each question. An "A" indicates that the question was submitted by the live audience. The cards were pre-numbered to easily identify the question once they were submitted. These questions are in the order in which they were asked. Some questions were rewritten for clarity.

A91: Define CAFO for us. Thanks.

A5: Is population growth considered in the efforts to meet the TMDL? (i.e., even if today's Bay inhabitants clean up their way of life; if we add 20% more people we all need to be 20% cleaner in the future.)

A43: What percentage of nutrients does atmospheric deposition bring into the Chesapeake Bay? Is this factored into the reduction quota for each state? If so, what does Maryland have to do to absorb in comparison to the other states and D.C.? What is being required of those states outside the Bay region? What eventual population loads are the TMDLs developed for?

A150: How reliable is the Phase 5.2 Watershed Model? Isn't this model still under development? Loading targets are therefore draft.

A31: Most of the WWTPs in Caroline County and the Eastern Shore are minor plants (less than .5 mgd). Presently there is no dedicated funding source for upgrades of minor plants. Will this change with the establishment of TMDLs? In rural counties these minor plants have a significant collective impact.

A20: If a local government exceeds their TMDL "diet," what regulatory enforcement measures will be implemented? For instance, do you anticipate withholding building permits?

A39: The huge amount of sediment in storage behind Comowingo Dam could have an enormous negative impact on ongoing pollution reduction efforts. The sediment behind the dam is likely to be transported by SCEUV as storage is lost in the near future.

A151: The current models show an increase in total phosphorus on the Eastern Shore to meet Bay water quality. This appears to indicate a fault in the model. How can the TMDL goal include an increase in Total Phosphorus on the Eastern Shore? What is being done to ground truth the modeling?

A94: Is this Clean Water TMDL reduction program going to be like every other federal environmental protection program in that a big pot of money is allocated to implement best management practices, while little or no money is allocated for personnel that are essential in assessment, planning, layout and certification of the prescribed best management practices? Without soldiers in the field, how do we win the war?

A38: Will counties/local governments be able to opt out of nutrient trading (exchanging) or to develop their own parameters for a trading program within their boundaries?

A85: Will PowerPoints from each presenter be available? Where?

A44b: How often will the loading limits be adjusted and will this be on a consistent basis?

A152: How are nitrogen, phosphorus and sediment monitored? Is actual data used to verify models? Will monitoring be used to evaluate load reductions?

A40: Will the Bay watershed TMDLs be the same as the TMDLs already established by the state EPA? (Vince Davis, Del DOT)

A32: What is going to be different about TMDL implementation and when? We are hearing a lot of talk but I'm still looking for teeth. Every week planning/development decisions are being made based on a host of factors including more of late, questions about adequate facilities. TMDLs may be imperfect, but so are most factors used in these municipal and county planning and zoning venues. How/when are municipal and county governments to be required to live with the TMDLs in the watersheds they comprise? (Frank DiGialleonardo, Corsica River Conservancy)

A30: Counties and municipalities in Maryland have been completing water resource elements in their Comp Plans based on Tributary Strategy goals. When this TMDL replaces those tributary strategies, will local governments be expected to change these elements?

A57: Will an NPDES permittee holder who is not currently discharging be given an allocation?

A34: How are EPA's consequences different than MDE's "Contingencies?" Might contingencies also include things like more stringent permit requirements in halting new permits in areas (i.e., building moratorium)?

A100: Who will write the WIP's? How does the public get involved?

A74: Why do you think that a reduction in funding to local governments that cannot meet any new TMDL's would assist them in meeting these standards?

A1: There has been a lot of discussion about providing allocations at the county level. I am presuming that these allocations will at some point be incorporated into the county's MS4 permit (where there is one) so the requirements are enforceable. What about non-traditional MS4s (airports, universities, etc.)? Can these entities also expect to get requirements through their permits or will these requirements indeed be broader at the county level? Similarly, for example, in Prince George's County the county is a Phase I MS4 while there are Phase II MS4s that are within the county (entities share implementation of permit requirements). Can these "nested" Phase II MS4s expect new requirements in their permits?

A33: Forcing Maryland farmers to implement costly reductions with no offset money will force farming to move to the Mississippi Basin. How do we keep that from happening?

A70a: Explain progression/steps from establishing TMDL to assigning permit limits for nitrogen and phosphorus, especially in absence of numerical water quality standards for nitrogen, phosphorus, chlorophyll *a* in state regulations.
A70b: How can nutrient load trading be accomplished (between segments or basins) while assuring no segment degradation in the absence of numerical nitrogen, phosphorus and chlorophyll *a* water quality standards?

A16: How much sediment and nutrients are attributed to stream bank erosion and how to you plan to reduce the amount of nutrient rich legacy sediment left behind by historic mill dams from getting to the Bay?

A47: Sedimentation reduction is imperative for improving the health of the Bay. Why, then, has MDE moved away from, and made it more difficult to install, structural shoreline erosion controls? Living shorelines are a great concept, but they do little to attenuate the input of sediment into the Bay and its tributaries.

A98b: How will municipalities achieve credit towards public outreach or small non-point source projects that may or may not show up at a monitoring station? (Trish Hennessy-Webb)

Questions Submitted

Questions Submitted (but not answered):

A23a: In reference to the slide "Nutrient Sources from Maryland," how reliable is the Phase 5.2 watershed model? My understanding is the model is still under development (i.e. the loading rates are draft).

A23b: How is atmospheric deposition incorporated into these four categories? I'm trying to understand the impacts of atmospheric deposition in the Chesapeake Bay watershed.

A2: There are at least 18 phosphorus TMDLs on the Eastern Shore and many more impaired waterways. How can the TMDL goal include an increase in total phosphorus on the Eastern Shore? Allowing an increase in total phosphorus on the Shore appears to indicate a fault in the model. What is being done to ground truth the modeling?

A7a: If EPA finds that a waste water treatment plant contributes more than the allowable nutrient loads, will CAFOs and other point sources be held accountable for the treatment plants shortfalls?

A7b: Will local jurisdictions be held accountable for the treatment plants not meeting the allowable nutrient loads, not CAFOs?

A7c: Where is the date for TMDLs coming from and why is some of the data from 1995-2002? Scientific data is not computer models, so why not use actual data?

A66a: Since waters that contribute most to the problem should achieve the most reductions, can you give baselines by watershed of nitrogen, phosphorus and sedimentation presently found? How current are these tests? How often are these tests taken?

A66b: Can you please explain how the nitrogen and phosphorus are being monitored?

A98a: What are the tools used to evaluate load reductions over time? Will monitoring be the primary tool?

A44a: The Maryland phosphorus level under the Tributary Strategy is lower than the target. To me that means success. So why hit Maryland harder to reduce the phosphorus?

A44c: On what population base are the loadings being based (i.e., existing or future predicted)?

A55a: What is the impact of living shorelines?

A55b: What funding will be available for small (.5 mgd) WWPTs in small municipalities?

A55c: Do bubble systems help with oxygen levels?

A10: It looks like there is no dissolved oxygen primarily worse where there are larger WWTP and more population. Is that true?

A4: How will the effects on TMDLs be enforced/calculated for new and re-developments? What estimated population load are the TMDLs designed for?

A53: Why is there no mention of the 8- to 10-fold increase in nitrogen applied to corn since the 1950's? Without a significant reduction in this amount, your earnest effort has no chance of success. (Tom Hughes)

A14: How has increased water temperature in the Chesapeake watershed impacted the capacity of those waters to maintain healthy levels of dissolved oxygen? (H. Grant Troop)

A88: How big of a reduction does 200 million pounds of nitrogen per year and 15 million pounds of phosphorus represent, relative to current conditions?

A83a: MDE is being accused, and maybe sued, by the water keepers as not carrying out its inspections and enforcement of current polluters at this time. How will MDE be able to carry out these additional responsibilities under TMDLs?

A83b: The stormwater and sediment regulations that have become more stringent seem to apply to those development activities that are recent or will occur. How will those developments in existence for a long time be factored in to all of this so that the burden does not solely fall on agriculture or new development?

A41a: For watershed plans, who will conduct the studies? (Vince Davis, Del DOT)

A41b: Who will maintain the plan? (Vince Davis, Del DOT)

A41c: Who will be in charge of the plan and let the users know what their responsibilities will be? (Vince Davis, Del DOT)

A41d: What exactly will the plans contain in the way of information (hydrology, nutrient loads, hydraulic, biological health, etc)? (Vince Davis, Del DOT)

A71a: Any suggestion how this effort will be funded?

A71b: How will local planning, implementation and reporting be funded?

A71c: Will there be sector funds for NPS improvements?

A71d: Is there going to be steady funding rather than competitive grants?

A71e: What about an additional budget for preservation?

A84: All of the actions to be taken cost money. Stormwater and wastewater costs can be passed on to consumers. However, farmers cannot pass these costs on to their consumers. What additional funding sources will be available to help them and do we know what all of this will cost as an additional burden on those living in the Bay area?

A42: With watershed assessment units reduced or divided by a factor of 10, who will perform the 10 times amount work load of assessment of these subunits of waters flowing into the Chesapeake Bay watershed? When are these assessments carried out in relation to storm and rainfall events?

A37: Loads are being allocated on a watershed basis. How will fund be allocated to meet these goals? Who will be responsible for making sure that goals are met? What will be the enforcement mechanism?

A22: I don't understand how the maps shown on the "Nutrients Impacts on the Bay Water Quality" slide can show Maryland as having the highest impacts yet the earlier slides shown by the first presenter show the following:

"Nutrient Loads by State"

N	P
PA-41%	VA-45%
VA-26%	PA-24%
MD-20%	MD-18%
NY-6%	NY-6%

The slides seem to conflict with one another.

A3: Will NPDES permits be based on CWA goal of 40% reduction from 1985 loads? The recommended caps (at this point) do not appear to reflect that goal.

A8: With TMDLs being developed for the Bay Watershed, will there be waste load allocations also assigned? Irreducible concentrations? (Vince Davis, Del DOT)

A25: Given the extent and severity of low and no dissolved oxygen throughout the Bay and its tributaries, shouldn't interim restoration measure involving various aeration techniques be undertaken?

A82: Maryland and Pennsylvania will be bearing the brunt of the effort. It seems to me that EPA needs to assist these states more than those who will have less of a burden to bear – therefore consequences ought to be levied with more positive consideration because of this burden.

A81: Please clarify what types of federal grants/funding could be jeopardized if the states do not/cannot meet the EPA TMDL milestones – are you referring to any federal funding or solely EPA funding?

A9: What consequences will be imposed for missed targets (from the 2 year cycle)? (Vince Davis, Del DOT)

A73: You'll never achieve 460,000 acres of cover crops in the two year plan – what do you intend to do about it?

A35: What is going on with land use and/or policy in Virginia and Pennsylvania that makes their phosphorus and nitrogen number irregular? Other states like Maryland and New York have equal/similar percentages for nitrogen and phosphorus loads.

A64: Batiuk's slides show Pennsylvania and Virginia with higher nitrogen and phosphorus than Maryland, but Koroncai's slides show Maryland with higher impact – how are these both true?

A97: How often is the TMDL model calibrated against actual observed values? This data is crucial for creating factual, non-arbitrary TMDL values that reflect the most current real-world values. Also, and field observations should be performed throughout the year, not only in one season which might produce biased results.

A86: What water quality data do you have to verify that your model reductions for nitrogen and phosphorus are accurate, especially regarding phosphorus reductions in Maryland? I know of no data to support your claims.

A28a: For the BMP tool box will particular BMPs be rated for their ability to reduce certain nutrients? (Vince Davis, Del DOT)

A28b: What happens in areas whose BMPs cannot be installed? (Vince Davis, Del DOT)

A19: From the webcast, it was stated that all the runoff from the 95% rain event is to be captured and I'm presuming infiltrated or reused, but what about areas where that is not possible? (Vince Davis, Del DOT)

A18: Will water quality trading be considered? (Vince Davis, Del DOT)

A50: How does the infrastructure improvement get paid for?

Comments

The comments below have been paraphrased and are not a full transcription.

Comment 1:
What will be the protocol for taking the sample?
The conservation state district has for many years have been telling us where we need to be in this process. However, with the numbers that they give us, it is difficult to come up with restrictions with the quick results they are looking for. We have had people working to get us where we are today. Are we going to receive more money to get the extra people we will need for the new demands?
USDA RCS programs usually have a big pot of money that is put on to the table; however there are not enough people to get the work done. This will be the Achilles' heel.

Comment 2:
Tom Hughes
I've been going to meetings like this for 40 years and have heard this lecture and same promises many times before. CWA wasn't passed 25 years ago; it was passed 37 years ago. We have been promised TMDLs. Ten years ago in Annapolis we were promised that the TMDLs would be done by the end of 2000. Now it is 2009. The graphs and pie charts don't apply to the eastern shore and the pie charts don't adequately show the nutrients from agriculture. The models that show improvements are garbage. The water quality has been going downhill for 40 years and that is continuing. Nitrogen and phosphorus come primarily from agriculture areas. I blame the US Department of Ag, not the farmers. It is crazy for the EPA to try to clean up the Bay and the Department of Ag sanctions are putting too much nitrogen on the land.
Unless something is done about our current reliance on corn, nothing will change. We need a new recipe for chicken food. Nothing is going to change.

Comment 3:
Mr. Hutchinson
I was born into a farm family and they put me on a tractor in 1950. My father gave me management responsibilities and I have been farming ever since.
We are having a lot less sediment leaving our field compared to the 70s; it has been getting better every year since. We have been more efficient and have done things in a more timely manner - we have done a lot - we have been asked to do a lot and I'm not sure what else we can do.
We cannot just stop using nitrogen; we have to have nitrogen for our crops. There is technology in the experimental stage for applying nitrogen. They can adjust the amount of nitrogen used. We are willing to do this and have been doing it and will continue to do that for our farms.
The reason we need to put the Chesapeake Bay on a diet is because we have too many consumers on the land. Rich's comment before is not feasible. We also need more consumers in the water; we do not have enough oysters. We have had two successful rebuilding of Canadian geese and rockfish - we need to do that with oysters. The pie charts show that development contributed 29 percent and WWTP contributed 25 percent - you have to add those two together to get the true number. The graphs make it look like development is not contributing as much, but once you add them together; the amount is more than 50 percent. This number is higher than the 36 percent agriculture is contributing.

FOR MR. KORONCAI

Comments by Re Chesapeake Bay TMDL's Chesapeake College Dec. 11, 2009

Tom Hughes

Tom Hughes

After having attended meetings and hearings like this one for perhaps the last 40 years, at this point I don't know whether to laugh, cry or scream. I wonder if anyone else has noticed the irony of having this hearing in a theatre? To me it is perfectly fitting, as today is just another act in the almost four decade fraud known as the bay cleanup.

Why do I say it is a fraud? It is because thirty seven years after the passage of the Clean Water Act all that can be said is that the bay might have been worse off had we done nothing at all. Every measure that marks the impairment of the rivers of the eastern shore are still headed in the wrong direction. Observed levels of nitrogen, phosphorus, sediment, dissolved oxygen, chlorophyll and bacteria are all at shamefully bad levels, and continue to deteriorate. Mind you I'm speaking of observed, empirical data, not the bogus projections promulgated by the EPA and Maryland Department of Environment.

In the 1950's I first waded into the Miles River. It was a memorable experience. It was like wading into a well-stocked aquarium with all sorts of little creatures scurrying around. I was also somewhat confused by the fact that my grandfather's lawn, which he rarely mowed, did not seem to stop at the waters edge. It was growing under water! All the rivers of the eastern shore, and the bay as well, used to be full of what we know as S.A.V. How many of you remember weedless propellers and weedless fishing lures?

In the 1960's the people of Maryland started grumbling about the declining bay, and it was in the latter part of the decade when we started trying to "save the bay". I still have one of the first bumper stickers marking the beginning of the save the bay movement.

In 1972 the Clean Water Act was passed. States were tasked with identifying impaired waters, and developing so called "total maximum daily loads" of nutrients and other substances that were damaging the bay.

In the 1980's Maryland passed the Critical Area Law, and we also had the first installment of the Chesapeake Bay agreement. Unfortunately, it was also in this decade that the rockfish season was closed.

In the 1990's we had more revisions of the Bay agreement, and also had the pfiesteria outbreak in 1997. This was the first time that people became aware that one could get sick by merely coming into contact with the bay. In 1999 I attended a large meeting in Annapolis with lots of government officials when a new 5 year program to complete the long awaited TMDL's was announced with great fanfare. Both the EPA and MDE officials promised that all TMDL's for Talbot County would be in place by the end of 2000. Of course that never happened, and the bay program goals haven't been met either. The rivers of the eastern shore continue to decline, and dangerous disease organisms, such as mycobacteria, seem to be more prevalent. Having witnessed all this, I have every right to be cynical, and frankly I wonder how any government agency should expect to have any credibility about cleaning up the bay and be taken seriously. To be fair, I suppose the blame really lies with your political masters who are apparently more afraid of the agribusiness lobby than clueless voters who continue to lap up mendacious prose about various bay improvement efforts.

Albert Einstein once defined insanity as, "doing the same thing over and over again and expecting a different result". I have looked over the recent draft information published by the EPA about yet another attempt to save the bay. If one applies Einstein's definition, you people are all insane.

How can you possibly expect to clean up the rivers of the eastern shore if you make absolutely no mention of the amount of nitrogen put on corn?

During the decades that I and most Marylanders have been waiting for the bay to be saved, the amount of agricultural nitrogen applied (primarily to cornfields) has steadily risen. According to the U.S. Geological Survey (see attached) there has been about an eight to tenfold increase in the amount of nitrogen applied by farmers on the Delmarva peninsula since 1950. Since corn is so inefficient in its uptake of nitrogen, perhaps 30% of nitrogen applied to cornfields ends up in the bay.

Maryland's own "Baystat" website reveals that approximately 70% of the nitrogen and phosphorus and 80% of the sediment in the rivers of the eastern shore comes from agriculture. The scale of the difference in inputs is huge. For example, Easton's waste water plant is now contributing about 25,000 pounds of nitrogen to the Choptank per year. According to "Baystat", agriculture is contributing 2.5 million pounds, or a 100 times greater

amount. How can the EPA or MDE expect to improve the Choptank, or any other river on the shore or the bay as a whole, without drastically cutting ag's input of nitrogen? The same can be said for the Gulf of Mexico.

Now comes the hard part. Any suggested change in the ag. status quo is always met with vehement resistance, even in the face of the aforementioned evidence. Mind you I don't blame the farmers for what they do, they are only doing what the U.S. Department of Agriculture both sanctions and subsidizes. However, it is the epitome of insanity for one branch of the federal government to subsidize the bay's destruction, while another branch is supposed to clean it up without even mentioning the largest single source of nitrogen pollution. This insanity has to stop.

So what is to be done? First, the EPA has to come clean and admit that without a change in our current ag. fertilization rates, neither the bay nor the Gulf of Mexico are ever going to improve. At this point the agribusiness lobby will begin to howl, especially about so-called cheap food. There is increasing evidence that our corn based cheap food may not be so cheap after all. If one takes into account the destruction of seafood resources, the increases in obesity, heart disease, and diabetes caused by too much fat and fructose in our diet, and the possible decline in property values of waterfront property next to a dead bay, one should at least *question* the validity of our current food paradigm.

The E.P.A. (and or other government agencies and private organizations) should conduct thorough cost benefit analyses of the current corn based food model. The completed studies should be subjected to full congressional hearings. Various sustainable alternatives to the current corn model should be closely examined. It should be remembered that fifty years ago productive farms and the bay coexisted without conflict. There should be a real national conversation about the entire issue of how we produce food. It should go without saying that all other sources of nutrient pollution need to be significantly reduced as well.

If the states and federal government continue to ignore the damage being done to our nations waters by agricultural fertilizer, the death of the bay is guaranteed.

Major Findings

Nutrients in Ground Water and Streams

The primary sources of nutrients on the Delmarva Peninsula are inorganic fertilizer and manure (accounting for more than 95 percent), although other sources may be substantial in certain areas (fig. 5). **Atmospheric deposition** contributes an additional 4 percent. Estimated nitrogen contributions from the atmosphere to the peninsula were 15 million pounds in 1997, for example (National Atmospheric Deposition Program, 2003a,b). Atmospheric deposition may be a particularly important source of nutrients for plant growth in forested areas, where other nutrient sources are limited. Septic systems also contribute nutrients to ground water; previous studies on the peninsula, however, have found that septic systems generally contribute lower concentrations of nitrate to shallow ground water than do agricultural sources (Denver, 1989; Hamilton and others, 1993). Sewage-treatment plants also are nutrient sources for streams, but most treatment-plant discharges are to tidal waters surrounding the peninsula.

Nitrogen inputs from inorganic fertilizer have increased considerably over the past several decades, whereas the input of phosphorus has decreased. Nutrient inputs from manure, primarily poultry, also have recently decreased, although they still contribute substantially to total nutrient input (fig. 6).

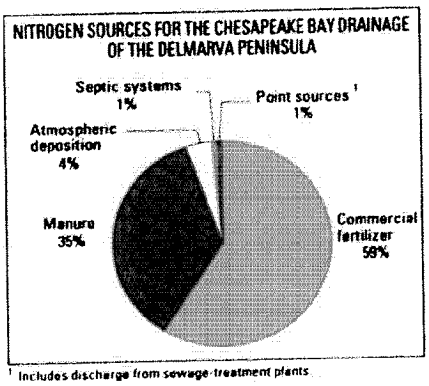


Figure 5. Nitrogen sources on the Delmarva Peninsula are primarily agricultural. (Data from Brakebill and Preston, 1999.)

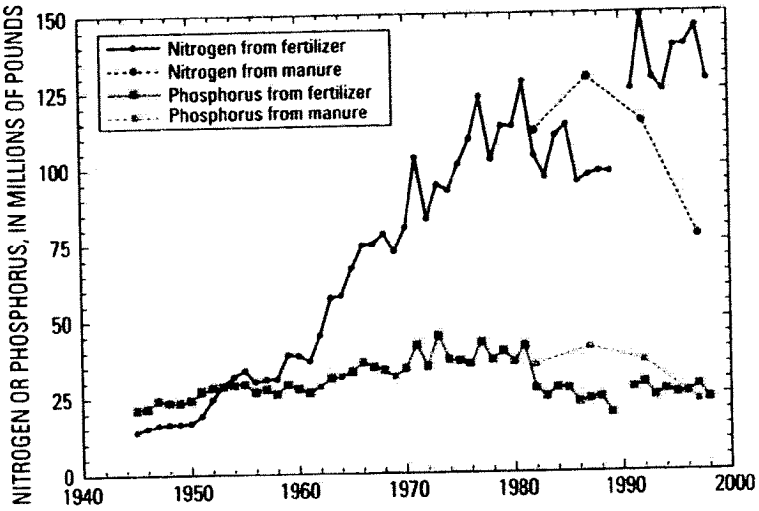


Figure 6. Nitrogen inputs from inorganic agricultural fertilizer applications on the peninsula have increased since the mid–1940s; phosphorus inputs have decreased. Manure also is a major source of nitrogen and phosphorus. (Data from Alexander and Smith, 1990; Battaglin and Goolsby, 1994; David Lorenz, U.S. Geological Survey, written commun., 2002.)

Nitrate is widespread in the surficial aquifer, including deeper parts used for drinking water

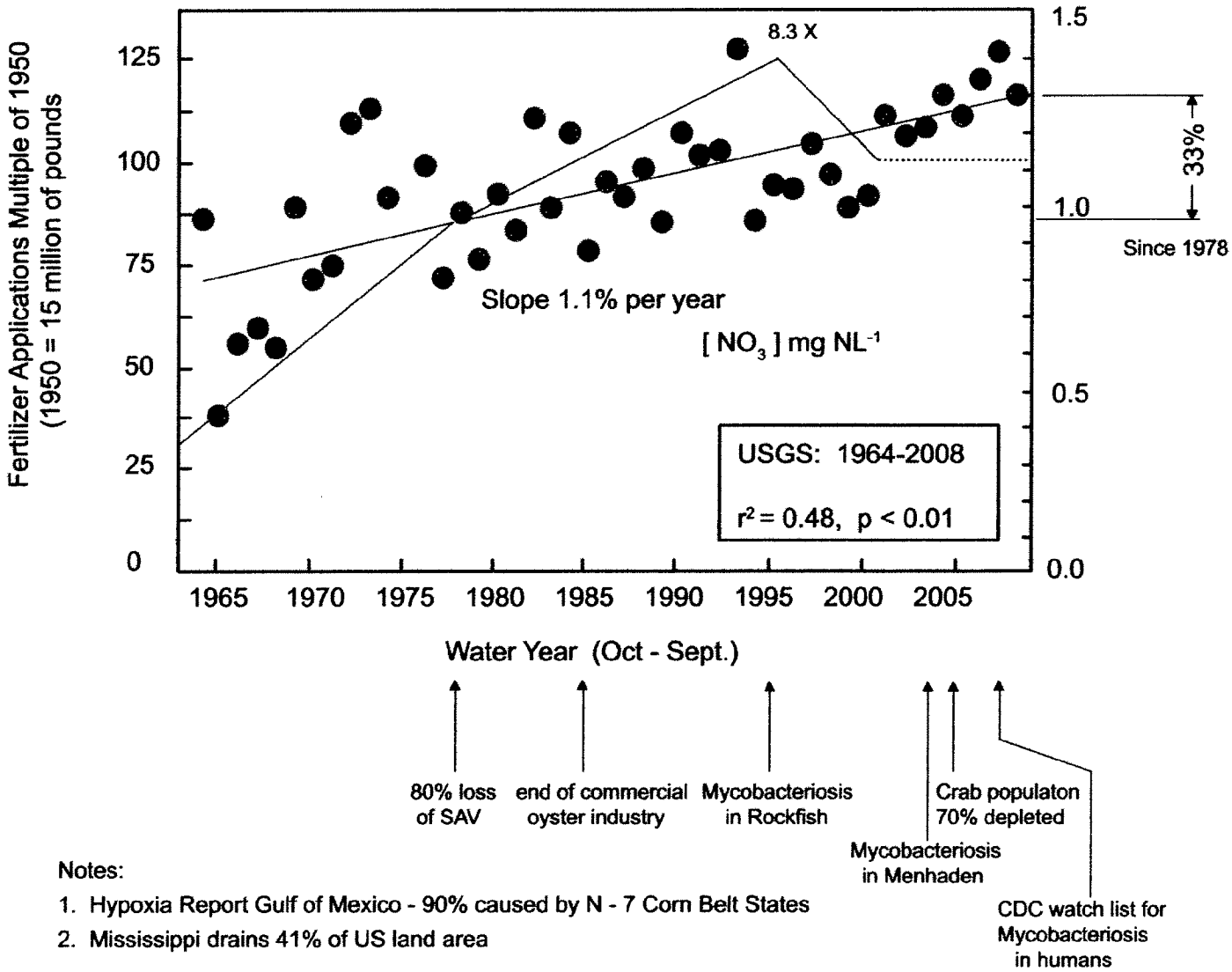
Concentrations of nitrate are typically above the natural background level of 0.4 mg/L (Hamilton and others, 1993) in shallow ground water (about 20 to 25 ft below land surface) beneath farmland. (Although laboratory results were reported as "nitrite plus nitrate," concentrations of nitrite generally were negligible; therefore, these results are reported as "nitrate" [as nitrogen] in this report.) Specifically, the **median** concentration of nitrate in samples from 29 wells in agricultural areas was 5.4 mg/L, and the maximum was 37 mg/L (fig. 7). Water in about one-third of the wells exceeded the Primary Maximum Contaminant Level of 10 mg/L (U.S. Environmental Protection Agency, 2002b). Nitrate at concentrations greater than 10 mg/L may cause methemoglobinemia, a life-threatening illness in infants. Shallow ground water beneath farmlands is not commonly used for drinking-water supply; however, contaminated shallow ground water can move downward into the surficial aquifer over time and affect the quality of deeper ground water that is used for drinking. Elevated concentrations of nitrate in deeper parts of the surficial aquifer indicate that such movement does occur; the distribution of nitrate in the part of the aquifer used for domestic supply in rural areas (median well depth 45 ft) is similar to that in the shallow ground water beneath farmland. Specifically, median nitrate concentration in the surficial aquifer typically used for domestic supply in rural areas (as indicated by data from 29 wells, 16 of which were monitoring wells and 13 of which were domestic wells) was 5.5 mg/L, and the maximum was 27 mg/L. Concentrations of nitrate in one-third of the domestic-well samples exceeded 10 mg/L. The median nitrate concentration in 30 public-supply wells in Delaware, located closer to urban areas and generally deeper than rural domestic

These findings are supported by the Study Unit Design described on pages 22 and 23.

Source U.S.G.S. Circular #1228

Choptank River Near Greensboro

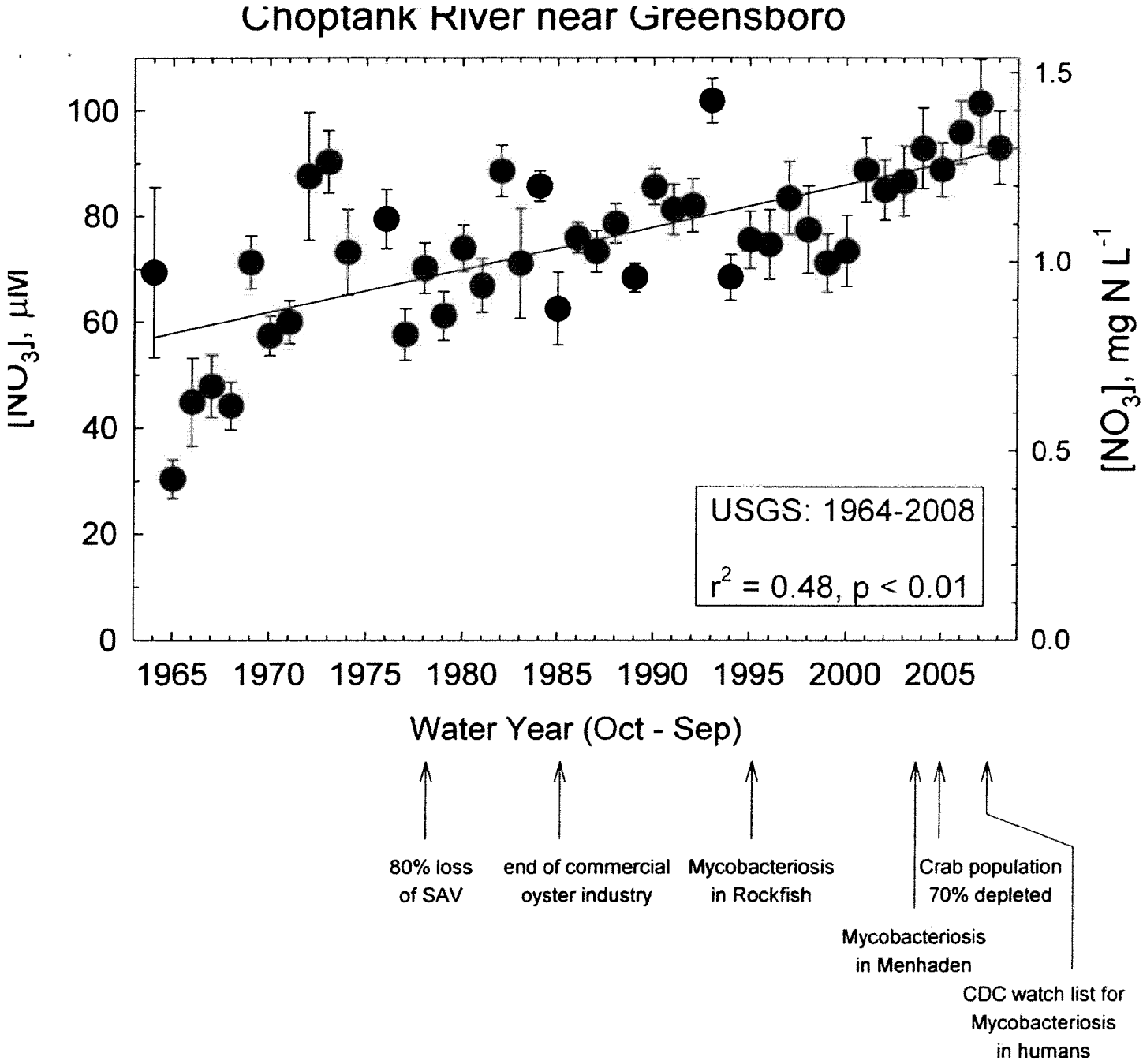
* Dr. T. Fisher, University of Maryland, Center for Environmental Studies



Notes:

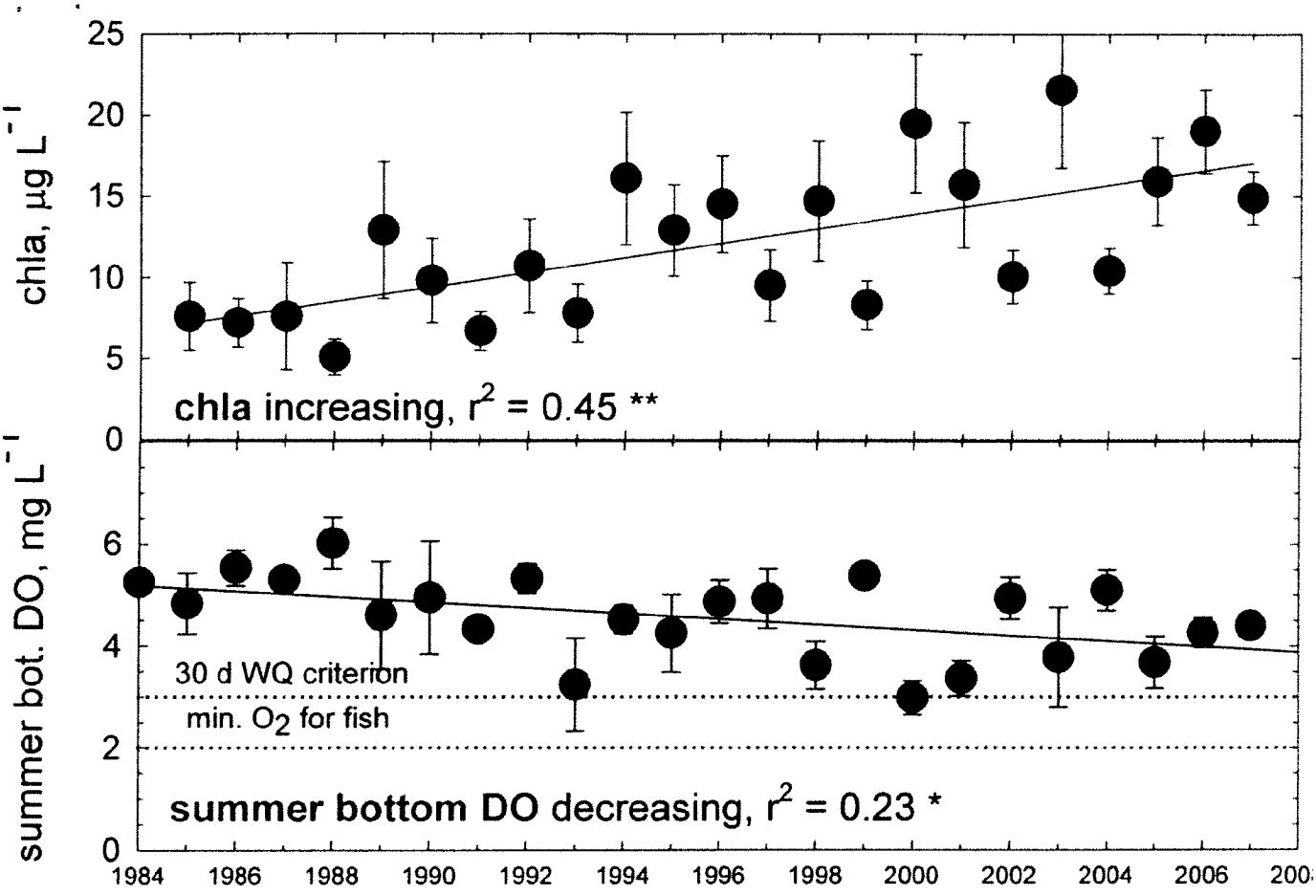
1. Hypoxia Report Gulf of Mexico - 90% caused by N - 7 Corn Belt States
2. Mississippi drains 41% of US land area

Source: Dr. Tom Fisher U of Md



Source: Dr Tom Fisher U. of Md

Water quality station by Choptank River Bridge



Source: Dr Tom Fisher U. of MD

MARYLAND DEPARTMENT OF THE ENVIRONMENT
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Parris N. Glendening
Governor

Jane T. Nishida
Secretary

October 16, 1998

The Honorable Wayne T. Gilchrest
Member, House of Representatives
Congress of the United States
332 Cannon Building
Washington DC 20515

Dear Congressman Gilchrest:

Secretary Nishida received your recent letter in which you requested clarification about the Maryland Department of the Environment's (MDE) strategy to adequately characterize the quality of the State's waters, and asked that I respond to you. More specifically, you have inquired as to how MDE plans to collect water quality data that is sufficient to develop scientifically credible Total Maximum Daily Loads (TMDLs). Your letter was also directed to Carol Browner, Administrator of the United States Environmental Protection Agency (EPA). I have spoken to EPA, and they have indicated that they will respond to you directly.

MDE acknowledges that one of the Department's highest monitoring priorities is to track our progress in improving the water quality of the Chesapeake Bay and its tributaries. A major component of the Bay restoration is the reduction of pollution from both point and nonpoint sources. The Department is committed to insuring that all of the waters of the State meet or exceed all water quality standards and fully meet all designated uses. To accomplish this goal, the management of all allowable pollutant loads into the Bay and tributaries must be based upon a complete understanding of the current water quality of the receiving water, a total inventory of all loads, and an assessment of the capacity of the body of water to assimilate additional pollutant loadings. For those waters currently impaired by pollution, the Department must also estimate the pollutant reductions necessary to return and maintain all water quality standards. The rigorous data requirements necessary to meet these two objectives, and the data needs associated with the development of TMDLs has led the Department to significantly modify our approach to water quality monitoring.

Beginning in the fall of 1998, MDE, with the support and concurrence of EPA, initiated a five-year watershed cycling approach to collect water quality data, compute TMDLs, and to issue NPDES permits (see attached map of regions). In each year of the cycle, we allocate 80% of our available monitoring and assessment capacity into a specific region of the State. (The remaining 20% capacity allows us to address emergency and contingency requests). This watershed approach results in a ten-fold increase in the number of monitoring stations in a given region. For example, over 150 stations were sampled in the first watershed in the cycle, which was composed of the Choptank - Lower Eastern Shore - Coastal Bays. Samples are collected at each of these stations under a wide range of weather conditions throughout the year in order to accurately characterize the system. Similarly, we have increased the intensity of sampling point source loadings and nonpoint source runoff within the targeted watershed. This concentration of effort allows us to collect data at a spatial and temporal scale sufficient to better understand the current health of these waters and to insure that pollutant inputs are capped at levels that assure that water quality goals are met.

MDE is currently developing the monitoring details of the second year of the watershed cycle. As you can see from the attached map, we will focus this year on the area indicated by the number 2. This area will include the mainstem and tributaries of the Tred Avon, Miles, Wye, Chester, Sassafras, Elk, Bohemia, Northeast, Bush and Gunpowder Rivers. Sampling will begin in early Spring 1999, and continue throughout the year. TMDLs will be computed within one year following the conclusion of monitoring. Finally, permits will begin to be issued as the TMDLs are completed.

I believe that the watershed approach being implemented by MDE, in concert with the trend monitoring being conducted by the Maryland Department of Natural Resources, will serve both the State's assessment and regulatory monitoring needs. I would be happy to provide you with additional detail on our monitoring strategy either in person or by way of written material. Please feel free to contact me at 410-631-3680, if I can assist you further in this matter.

Sincerely,

Michael S. Haire, Director
Technical and Regulatory Services
Administration

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The Washington Post

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Bay Pollution Progress Overstated

Government Program's Computer Model Proved Too Optimistic

By Peter Whoriskey
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EPA

At news conferences, on its Web site and in its regular publications, the government agency leading the cleanup of the Chesapeake Bay has documented more than a decade of steady progress.

The Chesapeake Bay Program has reported that the flow of major pollutants from rivers into North America's largest estuary has declined nearly 40 percent since 1985, bolstering the claims of politicians in Virginia, Maryland, Pennsylvania and the District that they were "saving the bay" and helping the states fend off criticism and lawsuits from environmentalists.

Those reports, however, significantly overstated the environmental achievements.

The estimates of pollution reduction were based on a computer model—not water samples—that program officials now say was distorted by overly generous assumptions.

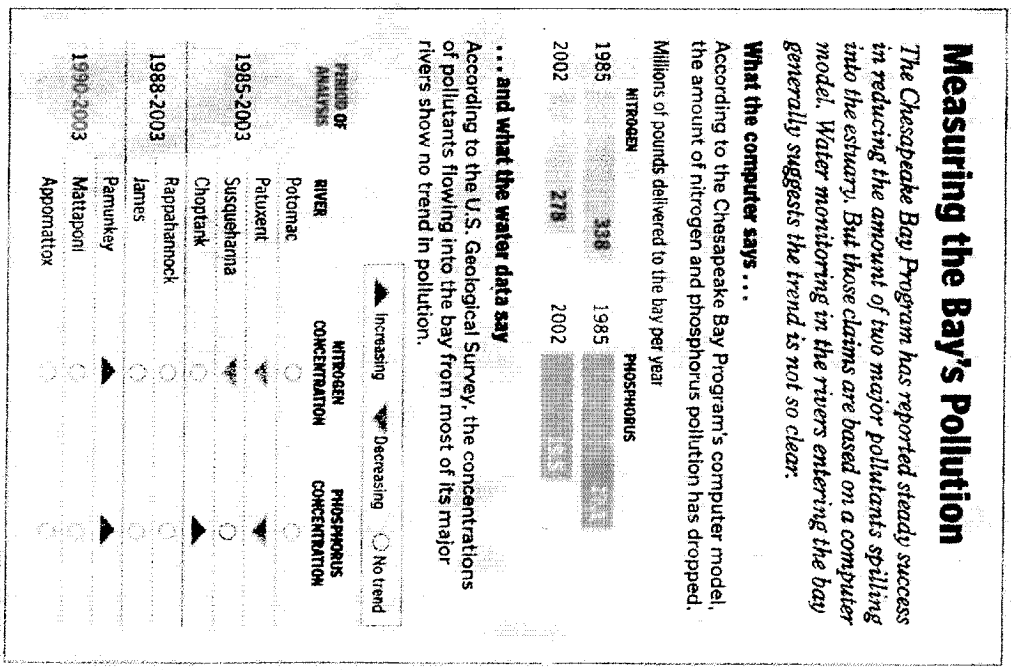
Bay Program officials said there was no deception involved. The magnitude of the gap between the computer estimates and actual water quality is a matter of scientific debate.

But U.S. Geological Survey water monitoring data from the mid-1980s through 2003, requested by The Washington Post, indicate that observed concentrations of the two targeted pollutants, nitrogen and phosphorus, showed no decline in most of the major rivers spilling into the bay.

Several scientists affiliated with the Chesapeake Bay Program said the water monitoring reports offer a more reliable measure of pollution reduction than the computer estimates that the program has used.

"Basically, what we're seeing is that the government has had its thumb on the scale for years," said J. Charles Fox, former secretary of the Maryland Department of Natural

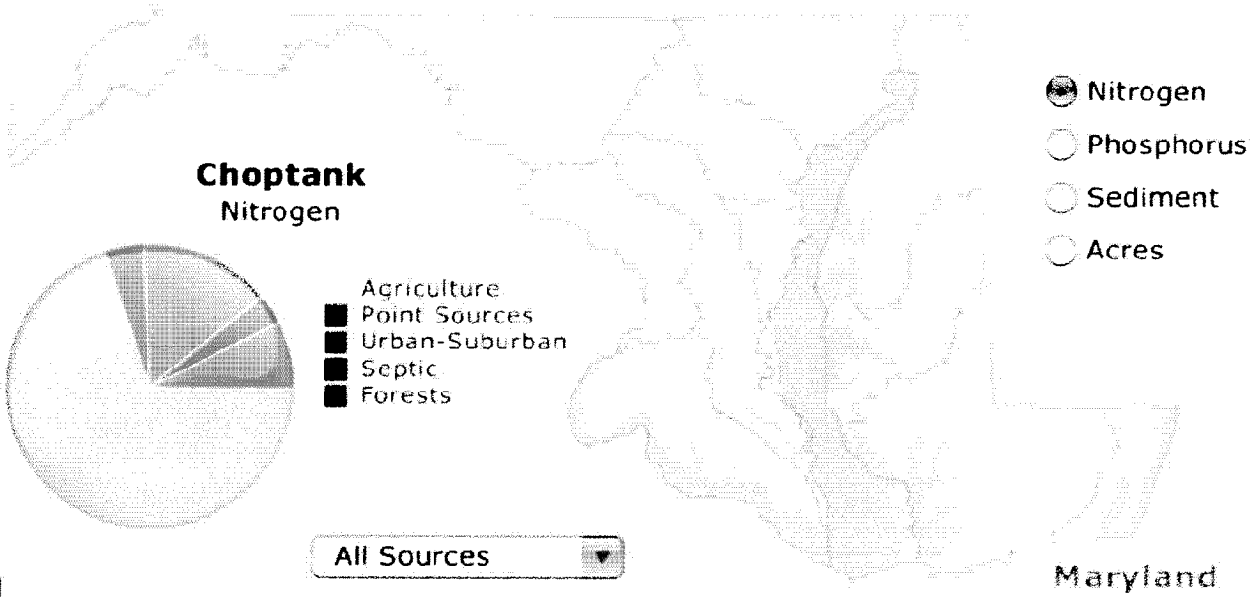
See BAY, *A12, Col. 1*



BAY STAT

Current Health | Problem Sources | Solutions

If you cannot see the graph below, click here to download the Adobe Flash Player



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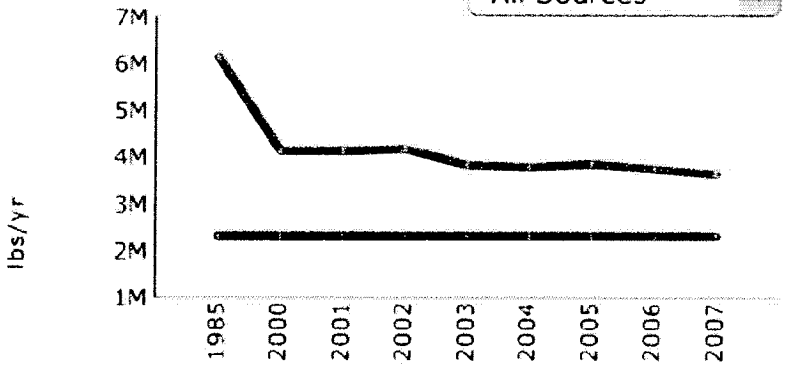

Choptank - All Sources

Trend Goal/Cap

Nitrogen: The primary nutrients polluting the Chesapeake Bay are nitrogen and phosphorous. High amounts of these nutrients increase the growth of algae. Algae become so abundant that the color of the water turns brownish or greenish. Sunlight is blocked from reaching other plants. When the algae die and decompose, oxygen dissolved in the water is used. Often, so much oxygen is used by decomposing algae that fish and other animals must move to areas with more oxygen. Plants and animals that cannot move may die.

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Martin O'Malley, Governor